Managing healthcare delivery costs by segmenting populations

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Abstract:
Most care management today is focused on activities within the physical walls where the treatment takes place. Yet an analysis of populations and their different care needs points to the need for a carefully tailored population-based care management approach. A new system called Total Health Management demonstrates that a firm must carry out 3 activities: 1. Manage risk. 2. Manage access. and 3. Manage care.

Full Text:

A large West Coast health insurer ("Buyer Company"), known primarily for its successful managed care products, purchased a small book of business (165,000 lives) from a large indemnity insurer divesting specific markets. This insurer ("Eastern Plan" New York) sold insured indemnity and PPO products.

Because Eastern Plan had been losing money, it was perceived that the loss was driven out-of-control medical costs. Buyer had been very successful in managing medical costs in its existing plans, and its executives felt sure they could institute a quick turnaround in Eastern by improving medical management. Buyer's chief medical offcier operating officer traveled to New York to create a plan that would reduce Eastern's annual $270 million medical costs by at least $20 million. The plan was to be implemented in the first six months of Buyer's ownership.

The executives began by comparing standard utilization and permember-per-month (pmpm) costs between the two plans, using Buyer's small book of indemnity and PPO business (214,000 lives) in California to compare to Eastern Plan. To their surprise, the California pmpm costs were higher!

Even after age and sex adjustments-the New York population had a higher proportion of older patients-the next steps were not obvious. Their perplexity increased when traditional analysis of ambulatory visits and inpatient

admissions revealed higher inpatient and lower outpatient utilization in Eastern. Before it could create a plan, Buyer (whose identity is masked for confidentiality purposes) needed to find a way to make sense of these unexpected findings.

The missing piece in this puzzle, the piece that would explain why the Buyer's pmpm costs were higher than Eastern's-and provide direction as to what to do about it-is true populationbased care management. Before considering how Buyer solved its problem, it is necessary to put this concept in its current context.

A complex picture

Most care management today is focused on activities within the physical walls where the treatment takes place-the hospital, emergency department, skilled nursing facility, home health, physician's office or other setting-rather than on the patient's complete set of care needs. Such a site-based approach is generally not coordinated across the continuum of care, and tends to employ a one-sizefits-all approach for patients.

Although most healthcare organizations do carry out minimal screening for "high risk" patients to allow a modicum of heightened attention to those in need of special care planning, site-based care management has yet to promote attention to individual patients within a population, across the disparate components of the care continuum.

Yet an analysis of populations and their different care needs points to the need for a carefully tailored populationbased care management approach. The table accompanying this article ("Population Segmentation: Enrollee and Cost Distributions") divides a sample of the urban nonrisk Medicare population into three categories: (1) individuals who have recently suffered a traumatic health incident, (2) those with an advanced chronic condition and (3) relatively well individuals. These individuals in each subpopulation have differing health status and different care needs; a health system should manage the care of each subpopulation differently.

Chronic-condition patients, for example, make up only 19 percent of this population, but account for 59 percent of the cost of care for the period analyzed. Many healthcare organizations would quickly conclude that this suggests a need to focus on the management of chronic conditions, which might result in a return on investment. But this picture is more complex than it seems.

A look at another population segmentation-this time a commercial indemnity/PPO population representing 3.2 million lives-shows that a surprising 1 percent of the population experiences a traumatic incident that consumes 25 percent of the costs.

These data suggest that an analysis of each subpopulation is crucial before drawing generalizations about care management priorities. To further complicate the picture, individuals can move from one subpopulation to another, and a patient who is "relatively well" today may be chronic tomorrow if he or she is not appropriately cared for.

Clearly, just embracing a population-based model for care management is not enough. Healthcare organizations need to develop a comprehensive care management vision, with the emphasis on the patient's needs, driven by physicians, relevant to all market stages and supported with real tools, methodologies and infrastructure.

Core concepts

For the past two years, our firm has been involved in developing a new approach to population-based care, which we call Total Health Management. It requires that an organization be able to carry out three activities:

1. Manage risk. The first step in this approach is to segment the population according to risk; this can be performed as patients enter the population. There are a variety of population risk-assessment tools. To be viable, the riskassessment content and approach must be designed specifically for the population in question, taking into account attributes such as population turnover rates and demographics. For example, if a Medicaid recipient must personally appear to register for benefits, an organization can consider such options as having a clinician on site to perform an immediate risk assessment.

Other populations may require a tiered-assessment instead, beginning with a brief written questionnaire, followed in select cases by a phone interview, and followed in even fewer cases by a home visit and personal interview. The financial feasibility of the riskassessment process is always an issue: Performing in-home visits for every patient of a population whose members turn over frequently is not likely to be cost effective, or to bring significant benefit to the patient.

2. Manage access. The focus here is on providing the appropriate level of care- neither too much nor too littlein the appropriate setting, and in a coordinated fashion. In essence, it is an intelligent, informed process to guide the patient to the appropriate settings at the appropriate time across the continuum of care. The goal is to ensure that the needs of specific populations are met as early as possible, and that information is shared with all stakeholders responsible for the patient's health across the continuum.

Suppose, for example, that John Doe calls a health advice line and is told he needs testing and a physician's appointment. During this single call, he might have his lab and radiology appointments as well as the follow-up physician's office appointment scheduled. When he arrives at the physician's office, the physician already has notes from the advice line call, along with the results from the lab and radiology tests. Personnel doing follow-up homecare, scheduled by the physician's office, use this full set of information to continue treatment of the patient.

3. Manage care. Care management is nearly nonexistent for many patients in the U.S. Although care management has been gaining attention since the introduction of the gatekeeper model in the `SOs, much of it has resulted solely in restricting access and managing price.

Total Health Management works by assigning individuals to a care management subpopulation, where they are cared for in specific ways until their needs change. This process includes a series of protocols and pathways that (1) build on medical research and the collective wisdom of a group of clinicians involved in caring for the patients, and (2) provide support for individual clinicians both at the point of care and in terms of screening and prevention.

Coordination among clinicians is paramount, but so is coordination with the patient. Unless patients are able to understand their plan of care, participate in key clinical decisions and fully comprehend their own care responsibilities, their participation and compliance are likely to be compromised.

How Buyer resolved its dilemma

How can organizations such as Buyer Company, described at the beginning of this article, prioritize activities to create an effective care management plan? It is important to begin with a diagnostic analysis that assesses an organization's population and gauges risk, and facilitates the development of an effective and sustainable vision. This diagnostic would include:

Benchmarking Analysis: based on claims data, which compares the costs of care for each population segment to that of comparable populations.

Capabilities Assessment: An analysis of the organization's care management processes and practices, including quantitative analyses of health promotion activities (such as screening and inoculations) and utilization, and a qualitative review of organization structure, processes and data reporting.

This is the process that Buyer used to **assess** its population base. Existing data spanning one year of paid **claims** for both the Eastern and Buyer plans' indemnity/PPO business were used as a basis for analysis of the two populations' **medical** costs. The data were used to assign each plan's members to a particular subpopulation: health maintenance, ambulatory, chronic **condition** or traumatic incident. Those with specific chronic **conditions** were also assigned to a disease category, such as congestive heart failure or asthma.

Review of the subpopulations revealed that the California population was sicker, with more members in the chronic condition and traumatic-incident categories and fewer members in health maintenance and ambulatory categories than Eastern Plan. This explained in part why the California plan's pmpm costs were higher.

When a series of analyses was performed on the sub populations and paired with a care management Capabilities Assessment, Buyer's executives were able to reach the following conclusions:

Eastern Plan's health maintenance subpopulation costs were higher than Buyer's for the age groups 0-17, 18-34, and 35-44. The Capabilities Assessment showed significant health maintenance programs for prenatal and ages 45 and older groups, but none for the middle group. Adopting programs similar to what the Buyer plan had for these younger populations could reduce costs. California's pmpm costs for this middle group were $12 less per member than Eastern's; for the 57,000 New York members this could mean nearly $7 million in reduced medical expenses.

Compared to the California group, the New York traumaticincident population had significantly higher utilization for

all parts of the healthcare continuum. The Capabilities Assessment suggested that installation of a substantial traumatic-incident identification and care management program, one similar to that already in place in California, could reduce medical costs by up to $5,600 pmpm for this subpopulation or up to $15 million for this total population.

Analysis of ambulatory populations showed no improvement opportunities that might result in large medical cost savings. Some improvements in member services and care coordination might be made, but the opportunities were logged as a secondary priority.

A comparison between the two plans' pmpm costs for 17 chronic conditions suggested several areas in which a chronic condition management program could favorably impact the New York medical costs. Eastern was in the process of designing disease management programs, and had in fact spent $500,000 to date on its design. However, the chronic conditions it was focusing on were not highlighted as those likely to bring substantial improvement. If Eastern implemented programs similar to Buyer's plan for these specific chronic conditions, they could potentially reduce medical expenses by an additional $10 million.

This analysis enabled Buyer to create a direction and work plan with a potential cost savings of $32 million while improving its care management. Buyer is now in the process of creating a detailed design to change its operations as a next step toward implementation.

Are you ready for care management?

Results of a survey we conducted in the summer of 1996 showed that 96 percent of managed care organizations and 91 percent of providers plan to increase their focus on care management, which they regard, along with inpatient and outpatient protocols and information systems enhancement, as critical to survival in a highly competitive market. At the same time, 90 percent of the 165 respondents expected their investments in care management to reduce the cost of providing care. Truly, the age of care management has dawned.

Employers, governments, payers and providers all feel the need to put more focus on care management, potentially even positioning it as a future competitive advantage. But so far, while there is a flurry of activity, there is no consensus, no real comprehensive, future vision to move toward.

Any healthcare organization considering care management initiatives will have to be able to articulate its care management vision, take stock of its current abilities and map out a financially feasible, time-phased plan to achieve this vision. It must also evaluate whether its larger infrastructure enables it to manage risk, access and care in an effective and coordinated way.

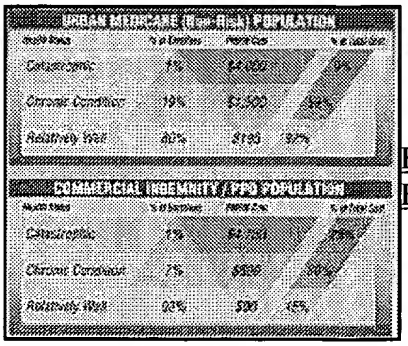

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Figure 1-Population Segmentation: Enrollee and Cost Distributions

Before investing significant dollars on costly technologies or restructuring, ask yourself:

What information systems and technology do I currently have, and what do I really need, to provide the information and drive the effective management of risk, access and care?

What change-leadership approaches and techniques do I need to take to more completely modify clinician and patient behavior?

How can I ensure that care is delivered across the continuum of a patient's care cycle, to ensure availability and

Comment: The future of behavioral economic analysis of law

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Abstract:
Where behavioral economic analysis of law and conventional law and economics differ is in the model of human behavior they employ. Conventional law and economics assumes that people exhibit rational choice. It claims that deviations from rational choice generally are not systematic, and thus generally will cancel each other out. Behavioral economic analysis of law scholars argue that people do not behave consistently with rational choice theory, and, moreover, that these deviations from rational behavior are systematic, not random. The problems associated with employing behavioral analysis to derive normative policy conclusions are demonstrated by an examination of 3 cognitive biases that have received particular attention in the literature: 1. the endowment effect, 2. overoptimization, and 3. a concern for fairness. These biases are briefly summarized and their implications for conventional law and economics discussed. Some of the difficulties inherent in attempting to incorporate experimental findings on these biases into legal analysis are examined.

Full Text:

I. INTRODUCTION

Behavioral economic analysis of law presents an important challenge to conventional law and economics, strengthened in part by the fact that conventional law and economics is itself a behavioral approach to law. Indeed, conventional law and economics can be viewed as the first widely-adopted behavioral approach to law.

A central contribution of Ronald Coase's pathbreaking article was the claim that one cannot determine the effect of

a law by simply looking at the law itself-at the conduct the law requires. Instead, one must determine how people will respond to the law.l Legal rules, he argued, do not dictate behavior-they simply establish prices and sanctions for various actions. Thus the initial allocation of a resource will not necessarily determine its ultimate use because people will bargain when doing so is mutually profitable.2 This is, at its core, a behavioral analysis of law.

Where behavioral economic analysis of law and conventional law and economics differ, however, is in the **model** of human behavior they employ. Conventional law and economics assumes that people exhibit rational choice: that people are self-interested utility maximizers with stable preferences and the capacity to optimally accumulate and **assess** information.3 Law and economics scholars do not **claim** that this rational choice **model** perfectly captures all human behavior. But they do **claim** that deviations from rational choice generally are not systematic, and thus generally will cancel each other out. For example, law and economics scholars argue that even if people do not accurately estimate the risk that they will be injured, some people will overestimate the risk while others will underestimate it, producing only "noise" and not a systematic bias. These scholars thus assert that rational choice, while not a perfect description of human behavior, is the best workable approximation of human behavior.

Behavioral economic analysis of law scholars argue that people do not behave consistently with rational choice theory, and, moreover, that the deviations from rational behavior are systematic, not random.4 Most people are likely to exhibit certain biases, they assert, and thus these deviations from rational choice do not cancel each other out.5 Indeed, behavioral economic analysis of law scholars argue that biased reasoning is a more plausible model of human behavior than is rational choice because biased reasoning is what natural selection would most likely produce.6

These systematic deviations from rational choice theory present a challenge to conventional law and economics. Conventional law and economics generally seeks to influence-or at least describe the effects of-actual policy in the real world. Yet if people regularly behave differently than the economists' model predicts, the results of this analysis may be suspect.

The presence of systematic biases poses a particular challenge to the strongest anti-paternalism claims of conventional law and economics, many of which appear to depend on the assumption that individuals choose rationally. For example, some law and economics scholars have argued against products liability for injuries to consumers on the grounds that consumers' market choices will provide firms with the correct incentives to produce safe products and that consumers can better insure against the risk of injury using first party insurance.7 Others have argued against paternalistic contracts doctrines that protect people from the consequences of contracts into which they freely entered.8 Both arguments are based on the assumption that people are rational and can best decide what is in their own best interest, provided they are fully informed.

Behavioral analysis scholars argue that we cannot necessarily base policy decisions on the assumption that people are rational since people regularly make decisions that deviate from rational choice in predictable ways.9 This is correct. Economic analysis can only be improved by incorporating a richer and more accurate view of human behavior. Indeed, much of the interesting future scholarship is likely to focus on increasing our understanding of human behavior and determining how to incorporate this more accurate model of human behavior into law and economics. This analysis will likely require law and economics scholars to recognize the limits of the rational choice model and to acknowledge that in some circumstances actual policy decisions should not be based on the assumption that people are rational.

Nevertheless, although behavioral economic analysis of law presents a powerful challenge to conventional law and economics, this Comment argues that behavioral economic analysis of law is not yet-and may never be-in a position to supplant conventional law and economics. In many circumstances, rational choice remains a reasonable description of individual choice because many-though not all-cognitive biases are muted as people learn by experience, work within organizations, or obtain advice from experts.lo In addition, even when people are not rational, behavioral analysis of law cannot necessarily provide an alternative framework for developing normative policy prescriptions because it does not yet have a coherent, robust, tractable model of human behavior which can serve as a basis for such recommendations.ll

Behavioral analysis of law does not have a coherent model of human behavior in part because the existing behavioral scholarship has not focused on developing such a model. Behavioral economists and cognitive psychologists generally have focused on demonstrating that people do not necessarily exhibit rational choice.l2 As behavioral scholars recognize, these results were not designed-and are unlikely-to produce a robust alternative model of human behavior for several reasons.

First, a number of the observed biases appear under certain circumstances, but not in others. It is difficult to predict how, when, or whether many of these biases will manifest themselves in the real world because scholars do not yet fully understand why many of them exist-they are empirical results awaiting a full theoretical explanation. Yet we cannot be confident that an observed bias really does affect actual decisions-as opposed to being simply an artifact of experimental design-until we can explain why the bias exists.19 Even when we are confident a bias exists, we must know why people exhibit the bias in order to determine when they will do sol and also the extent to which a particular bias may be susceptible to manipulation. A bias that is a simple rule of thumb may be easy to eliminate with education; a bias that is an adaptive advantage may not be.ls

In addition, it is difficult to develop a robust model of human behavior from existing scholarship because the environment in which people actually operate and make choices is far more complex than the environment of most behavioral experiments. Although many (but by no means all) experiments involve single-shot situations, people in the real world often are able to learn from their experiences. This learning generally takes place in situations involving higher stakes than are involved in most experiments. Learning may mute various biases-and possibly produce new biases. In the real world, biases also may be muted or altered by market forces, the experience of operating within an organization, or expert advice.16 Further complicating matters, many decisions will implicate multiple biases and heuristics-involving multiple interrelated individuals-that may produce unpredictable, complex, or even conflicting interactions.

Finally, even when biases and heuristics systematically affect decision making in predictable ways, the normative policy implications are often far from clear. Proposals designed to address biases generally entail the intervention of judges, legislators, or bureaucrats who are also subject to various biases. The very power of the behavioralist critique-that even educated people exhibit certain biases-thus undercuts efforts to redress such biases. In addition, the decisions of government actors also may be adversely influenced by political concerns-specifically, interest group politics. Thus interventions to "cure" bias-induced inefficiency may ultimately produce outcomes that are worse than the problem itself. The behavioralists' evidence that nonintervention may not lead to an optimal outcome, therefore, does not necessarily imply that intervention is appropriate.

Behavioral economic analysis of law therefore represents a powerful challenge to conventional law and economics that must be heeded. It redefines many debates, focusing analysis on the nature of actual human choice. Yet while behavioral analysis of law may improve the recommendations flowing from the standard analysis, it will not supplant conventional law and economics as a central framework for normative policy analysis any time in the near future.

This Comment demonstrates the problems associated with employing behavioral analysis to derive normative policy conclusions by examining three cognitive biases that have received particular attention in the literature: the endowment effect, overoptimism, and a concern for fairness. Part II briefly summarizes these biases and discusses their implications for conventional law and economics. Part III examines some of the difficulties inherent in attempting to incorporate experimental findings on these biases into legal analysis.

II. EXISTING EVIDENCE OF NONRATIONAL CHOICE

Although conventional law and economics scholars assume that people exhibit rational choice, existing scholarship in both cognitive psychology and behavioral economics suggests that human behavior often deviates from rational choice in systematic and predictable ways. These biases and heuristics include the observations that people: (i) exhibit an endowment effect and a status quo bias; (ii) tend to be self-serving and overly optimistic in their assessment of certain risks and overly pessimistic in their views of other risks; (iii) engage in mental accounting; (iv) care deeply about fairness; and (v) are affected by irrelevant alternatives.17

This section discusses three of these biases-the endowment effect, overoptimism, and fairness. Part III discusses the strength of the challenge presented by experimental findings on these biases, focusing on the real world forces that might cause these biases to be weaker than they appear to be in the laboratory.

A. The Endowment Effect and Status Quo Bias

The endowment effect is one of the best-known cognitive biases, and is also one of the best-established in the laboratory. The endowment effect refers to the observation that people often demand significantly more to give up an object than they would be willing to pay to acquire it, even when the transaction costs associated with reacquiring a similar object are very low. Professors Kahneman and Tversky argue that the endowment effect is a manifestation of "loss aversion"-which exists when the disutility associated with giving up an object is greater than the utility gained by acquiring it, even when there are no wealth effects.18

The classic experiment illustrating the endowment effect involved Cornell coffee mugs. Half of the subjects were given Cornell coffee mugs, which sold at the nearby bookstore for $6. The mugs were distributed randomly. The participants were then told to bargain over the mugs: those without mugs could try to buy them from those who had them. Economic theory predicts that half the mugs would trade, moving from those who care about mugs less to those who wanted them more. Yet in fact few mugs traded. The reason was that the median seller required $5.25 to part with his mug whereas the median buyer was not willing to pay more than $2.25$2.75 to purchase the mug. In other words, the subjects who owned mugs valued them approximately twice as much as those who did not; thus most mugs did not trade. This was true even though the subjects possessed the mugs for a remarkably short period of time prior to being asked to trade them. This result could not be explained by wealth effects, since the mugs did not affect the participants' total wealth. Rather, the researchers concluded that each mug owner came to value her mug more simply because she now owned it.19

The endowment effect challenges the fundamental assumption of economics that, absent wealth effects, an individual's maximum willingness to pay for a good should equal his minimum sale price. This assumption is at the heart of the conclusion that in markets with de minimis transactions costs, commodities will flow to the people who value them most. If-as the endowment effect implies-people value goods they own substantially more than goods they do not own simply because they own them, then commodities will not necessarily flow to those who value them most highly (in the sense that the commodities may not flow to those who would value them more if they owned them).20 In such a case, legal regimes will not necessarily maximize social welfare simply by following the standard law and economics prescription to minimize transaction costs and allow markets to operate wherever possible. Indeed, the concept of social welfare may not be well-defined in a world with endowment effects.21

Additionally, evidence suggests that people exhibit a "status quo bias," in that, all else equal, they prefer to leave things as they are.22 This observation that people value the status quo for its own sake implies that people's choices often are "path dependent," with the preferred outcome depending on the initial choice. This violates the economic tenet that an individual will select the choice that maximizes her utility without regard to the order in which the choices are presented. Professor Korobkin and others have suggested that this bias also affects contracting, causing people to prefer the term labeled as the "default term."23

These two biases thus undermine the central premise of conventional law and economics that fully informed individuals allowed to exercise free choice will maximize their own utility-and thus social welfare-when transaction costs are low. Some argue that these biases thus justify more interventionist, protective legal rules than are advocated by many conventional law and economics scholars.24 Yet, as will be shown, the scope of these biases is far from clear. Nor is it clear that they generally justify additional intervention.

B. Overoptimism

Experimental evidence and empirical analysis also suggest that people make consistent and systematic errors in risk assessment. This undermines the standard assumption of conventional law and economics that fully-informed individuals employ expected utility analysis to accurately assess risk.

Behavioral economic analysis of law scholars generally focus on evidence that people systematically underestimate many risks-particularly risks to themselves. Evidence suggests that people are particularly likely to underestimate the extent to which they themselves are at risk, causing them, for example, to underestimate the likelihood of being injured in a car accident.25 Thus a person may be over-optimistic about her own fate, even when she knows the magnitude of the risk to the general public, because she believes that her future will be better than that of the general population? The tendency to underestimate the risk of a bad outcome appears to be especially great when people can affect the magnitude of the risk through their own behavior, because people tend to overestimate their own capabilities.27 Thus a person who knows the average risk of being in a car accident nevertheless generally will underestimate her own risk of being in a crash because most people believe they are better than average drivers.28

The possibility that people are systematically overly optimistic has important implications for the economic analysis of law. It suggests that individuals operating in markets may underestimate the risks to which they are subject, and thus take actions that do not maximize their own utility. As a result, social welfare also will not be maximized. For example, if consumers underestimate the risk of being injured, they will not properly calculate the implicit price of a risky product (the market price plus the risk of harm) and, believing it to be less costly than it is, will purchase too much of it at too high a price. Markets thus will not induce producers to produce optimally safe products. Consumers also will be likely to systematically underinsure against such risk.29 Thus, products liability might be necessary to provide adequate deterrence and also to provide adequate insurance for consumers.30

Overoptimism also has other implications. Professor Langevoort has suggested that overoptimism may explain other puzzling behavior, such as managers' willingness to commit securities fraud. Conventional economic analysis suggests that managers of publicly held firms generally will not commit securities fraud because they are repeat players in the capital markets and will be punished by the markets for committing fraud, which in the end is likely to be detected. Managers generally should only commit fraud if they perceive themselves to be in a last period situation.31 Although there is considerable evidence that many frauds are a result of last period concerns,32 this hypothesis does not explain all frauds. The puzzle for conventional economic theory is why these other frauds occur. Employing behavioral analysis, Langevoort has suggested that perhaps some of these frauds are not actual fraud-in the sense of being intentional false statements-but rather often are expressions of managers' self-serving, excessively overoptimistic view of the firm, which, while lacking any reasonable basis, are nevertheless honestly held. If this is correct, then the traditional approach to securities fraud may have to be modified.

C. Fairness and Self-Serving Bias

Conventional economic theory also assumes that people do not care about fairness, per se. Rather, people are assumed to take any deal that would make them better off than they would be otherwise, even if they perceive it to be unfair.34

Experimental evidence, however, suggests that people do care about fairness. Indeed, they care about it so much that they may reject a deal that is unfair, even if doing so leaves them economically worse off. For example, people may reject unfair deals even in oneshot situations, where taking a hard line produces no future advantage.35 This implies, contrary to economic theory, that some net-positive bargains may not occur.

The classic experimental evidence that people value fairness comes from the ultimatum game.36 In the simplest version of the game, there are two players. One player is given an amount of money to divide between them. The other player can either accept the amount given her or reject it. If she rejects it, neither gets anything. Economic theory predicts that the first player should offer the smallest amount possible and the second player should accept this offer because it is better than what she would receive if she rejects it. Yet this is not what happens. Second players tend to reject anything they perceive to be "unfair"-generally less than twenty percent. The initial players anticipate this and generally offer substantial sums-ordinarily forty to fifty percent.37

This experiment suggests that people will not necessarily accept all bargains that benefit them. They may reject a bargain they perceive to be unfair, even at some cost to themselves. Thus, some mutually beneficial bargains may not occur if one person perceives the other to be acting unfairly.38

Moreover, the risk of perceived unfairness is greater than it might at first seem because people tend to have a self-serving assessment of what is fair. While people consider a fifty-fifty split to be a fair division of a sum to which neither considers herself entitled,39 in many other situations people tend to overvalue their own contributions and thus to overvalue the amount to which they are entitled.40 This self-serving tendency in assessing one's own worth also exists at the group level, and indeed may even grow stronger when groups predictably attempt to maximize the difference between themselves and another group.41 This implies that mutually beneficial bargains may not occur even when each side perceives herself to have acted fairly, because one (or both) believes the other is not acting fairly. Free markets thus will not necessarily maximize social welfare.

III. LIMITATIONS OF NORMATIVE BEHAVIORAL ECONOMIC ANALYSIS

The experimental literature presents a compelling case that people are not necessarily rational utility maximizers but instead may exhibit certain predictable, systematic biases. This evidence, at a minimum, suggests that law and economics scholars cannot necessarily assume that results derived from a rational choice model apply to the real world. They should consider the implications of the behavioral literature before reaching final policy conclusions.

Nevertheless, although conventional law and economics can be improved by attending to the results of behavioral studies, behavioral economic analysis of law is not likely to replace conventional law and economics. Moreover, in many areas rational choice is likely to remain the standard paradigm, with behavioral analysis providing additional depth and complexity.

Behavioral economic analysis of law cannot serve as the basis for broad normative policy conclusions because it cannot provide a coherent alternative model of human behavior capable of generating testable predictions and policy conclusions in a wide range of areas. Examining the three biases discussed above, this Part shows that the

laboratory and empirical results are difficult to transform into a model of human behavior suitable for normative policy analysis.

First, many biases exist in some circumstances but not in others, with the scope of these biases often being difficult to predict. In addition, individuals making risky choices in the real world often are subject to more than one bias and employ multiple heuristics, with sometimes conflicting effects.42 Moreover, people's real-world choices often are affected by market forces, group decision making, expert advice and their own experiences in ways which may alter, reduce, or even eliminate these biases. Education may also reduce or eliminate some biases under certain circumstances. Finally, it is difficult to formulate normative policy which takes these biases into account because legal regimes designed to address the biases and heuristics generally require intervention by individuals-for example regulators, judges, and juries-who also exhibit biases.44

A. The Endowment Effect

Consider the endowment effect, with its seemingly straightforward conclusion that people value goods more when they own them than when they do not. The endowment effect is sufficiently well established in the laboratory that legal scholars cannot ignore it. Yet scholars cannot assume that the endowment effect affects all exchanges. Quite the contrary, the evidence suggests that the endowment effect does not apply to many transactions.45 Analysis of the endowment effect is further complicated by the fact that we do not fully understand why the effect exists in the first place-at least not in a way that also explains why the effect does not exist in certain circumstances.46 This makes it difficult to predict when people will act consistently with the endowment effect and when they will not.

The existing evidence indicates that the endowment effect may not apply to many situations of particular concern to legal scholars. The endowment effect applies to students given university coffee mugs easily purchased in the nearby bookstore, and other similar situations.47 Yet the endowment effect does not exist when people are instead given a token with an assigned value which could be redeemed in cash at the end of the experiment. In this situation, the equilibrium price is exactly what economic theory predicts.48

The question is, do most exchange situations involve goods that are closer to coffee mugs affixed with a university seal or to tokens? The answer is unclear. Professors Jolls, Sunstein, and Thaler argue that most important situations do not involve tokens redeemable for cash-or, to be specific, do not involve goods whose value is exogenously defined.49 But, of course, many important situations do involve goods whose value are exogenously defined-goods which people view as being in essence tokens, representing only what they can get for them in the market. Most commercial transactions probably involve people exchanging goods in competitive markets where neither party forms an attachment to the goods.

In addition, evidence suggests that the form of ownership as well as the nature of the legal regime may eliminate the endowment effect. The endowment effect appears to vanish-or at least weaken significantly-when people do not actually possess the commodity at the time they are asked to trade it, but possess only the promise of the commodity. Subjects who are only given a voucher that can later be exchanged for a mug-and not the actual mug-exhibit only a weak endowment effect.51 In addition, subjects who are given only the probability of obtaining a good do not endow the good itself, although they do endow the gamble.52

Furthermore, Professors Rachlinski and Jourden argue that the endowment effect may not apply if the entitlement in question is protected with a liability rule rather than a property rule.58 Perhaps most striking, subjects did not display an endowment effect even when the entitlement was protected by a liability rule with a very high damages award-sufficiently high that it was unlikely that anyone would take the entitlement without permission.

Rachlinski and Jourden's findings, if robust, have potentially broad implications. A property right gives its holder the right to prohibit nonconsensual takings of an entitlement by obtaining an injunction.54 Many of our entitlements-such as to our health-would appear to be protected by property rules. Yet many entitlements ostensibly governed by a property rule are, in fact, ultimately governed by a liability regime. An entitlement is completely governed by a property rule when the government can force the return of the property should someone misappropriate the entitlement without consent. Often, however, the state protects an entitlement with an injunction but cannot force a wrongdoer who violates the injunction to return the appropriated entitlement intact-for example, because it was injured or destroyed. Instead, the state simply forces the wrongdoer to pay a very high damage award to the victim. Thus, property rules often are operationalized as liability rules with very high damage awards: An injurer willing to pay the price can appropriate the entitlement. The question is, do Rachlinski and Jourden's findings imply that the endowment effect does not apply to entitlements protected by property rules whose ultimate remedy is damages for violating an injunction? If so, then the endowment effect should not affect many important decisions, including those

involving risk to life and health. Considerably more research in this area is needed.

Moreover, even when the endowment effect otherwise would exist, various institutions may mute it. Questions remain as to the extent to which the effect can be reduced by various interventions. Experts, such as lawyers, may be able to reduce the effect by reducing people's personal attachment to goods. For example, one of the functions of real estate agents may be to mute the endowment effect by encouraging sellers to view their own house as simply another commodity and to recognize its weaknesses, while encouraging buyers to become attached to a house they are bidding on-to picture themselves already living there. Further research is needed on this issue.

Finally, even where the endowment effect is robust, behavioral economic analysis of law cannot yield clear normative policy implications any more than can conventional law and economics. Certainly the endowment effect-when it exists-undermines some central policy conclusions of conventional law and economics. It implies that people will not necessarily bargain around legal regimes-that once a right is protected by an injunction (or perhaps a damage rule), it may remain where the court allocated it.55 In addition, the endowment effect implies that the government cannot necessarily assign property rights using cost-benefit analysis-as many law and economics scholars have suggested56-because endowment effects make it difficult to define the cost and benefit of an entitlement.57 Yet the question arises whether behavioral economic analysis of law can proceed beyond these and other critiques of conventional law and economics to develop alternative policy conclusions on issues such as how to allocate entitlements or design damages rules. When endowment effects are present, behavioral economic analysis of law scholars also must wrestle with the question of how to allocate entitlements given that social welfare is not well-defined when endowment effects are present. Even the enriched economic analysis utilized by behavioral economic analysis of law scholars is unlikely to be able to fully resolve this issue.68 This does not mean the effort is futile, but at present recognition of endowment effects does not necessarily yield clear policy prescriptions that are clearly superior to those of conventional law and economics.

B. Overoptimism

Behavioral analysts also face difficulties in formulating normative policy prescriptions based on experimental evidence that people may be overly optimistic in assessing risk. First, there is conflicting evidence on whether people are in fact poor risk estimators. For example, although experiments show that people are not good at assessing risk when they are explicitly presented with probabilities, subjects were able to assess risk with reasonable accuracy when they were presented with information on frequencies instead of point estimates of probabilities. In one study, seventy-six percent of the subjects correctly analyzed the risk of disease when they were presented with information on the frequency of infection and were asked to disclose their understanding of the information provided.59 In addition, empirical analyses of people's actual choices provide conflicting evidence on whether people underestimate risk to themselves go

Moreover, even the evidence on biased decision making does not reveal a general systematic bias in favor of underestimating risk. Rather, people overestimate risk in some circumstances and underestimate it in others. Evidence suggests that people tend to overestimate certain known low probability risks, such as the chance of being struck by lightning or killed by a tornado.61 In addition, they tend to overestimate well-publicized, high-salience risks.62 Thus, in certain circumstances-for example when product-related injuries have been widely and graphically publicized-it is likely that individuals overestimate, rather than underestimate, the risks.6

These and other conflicting influences64 make it difficult to predict whether on average people will overestimate or underestimate risk in a given situation. It is even more difficult to predict whether people will overestimate or underestimate a whole category of risk, such as the risk of product defects, when some risks in the category are well-publicized and others are not.

In addition, even when we can be reasonably confident that people have a tendency to underestimate certain risks in single-shot situations, they will not necessarily continue to do so over time. People can, and do, learn to assess risks more accurately through experience.65 Thus overoptimism may not be a serious problem when experience enables people to improve their assessment of the relevant risk. People operating in certain markets where learning is possible and errors are punished-and people guided by experts who are repeat players-may not be overly optimistic. For example, evidence suggests that-as rational choice theory predicts-spot and future prices are very closely related.eg Players in these markets are repeat players who can profit whenever spot and future profits get out of line. Under these circumstances, those who correctly assess risks can profit; those who cannot are eventually eliminated. Thus these markets function essentially as if individuals rationally assess risk.6

Similarly, consumers who regularly purchase certain products may learn about the risks of failure of such products

from experience. Consumer groups may be able to assist consumers to pool and assess some of this information. And in some circumstances, high quality firms may have an incentive to encourage consumers to focus on the risks associated with low quality products.68

In addition, people may be less likely to overestimate risks when making well-considered decisions. People are less likely to be influenced by heuristics the more carefully they attend to the decision in question.s

Nevertheless, people are likely to remain overoptimistic in many situations.70 Many important decisions-such as the decision whether to undergo a particular medical procedure, or purchase a product with a risk of fatality, or commit a crime-do not occur in situations where the individual decision maker is a repeat player who will have the opportunity to learn from her mistakes. Nor in many circumstances will anyone else be able to profit from her mistaken risk assessments. Thus the decision maker does not learn, and no one else has an incentive to acquire the information to profit from the poor decision.7I

Even when people can learn from their mistakes, evidence suggests that people learn to reassess risks only in certain conditions: The connection between the risk and the outcome must be both prompt and unambiguous in order to substantially improve individual risk analysis.72 If the causal connection is complex, people will not necessarily understand that the misfortune that befell them is the product of a particular choice they made. The tendency to attribute bad events to luck and good events to personal choices and actions further obscures the connection between choices and results.73 Moreover, learning may be particularly difficult for people operating in groups or within organizations.74

Yet even in situations where individuals acting on their own would be overly optimistic, various institutions may exist to mute this bias. For example, in many situations people do not rely solely on their own assessments of the merits of the decision but hire thirdparty experts. Evidence suggests that people advised by third parties-for example, by lawyers-are less prone to underestimate certain risks. For example, plaintiffs counseled by lawyers-who are repeat players in the legal market-are less likely to overestimate the merits of their case.75 Professionals can further improve their clients' risk assessment by employing various debiasing techniques. For example, it may be possible to reduce self-serving bias by requiring people to list the weaknesses of their own opinion or case.76

Of course, professionals cannot be relied upon to eliminate all self-serving biases. Most decisions involving risk do not involve professionals. Moreover, even when professionals are involved, biases may infect their advice. Professionals are potentially subject to the same biases as lay persons. This suggests that a professional is most likely to be relatively free from biases in those situations where the professional is able to learn from her mistakes and where market forces will punish those who do not learn to assess risk correctly. Thus contingent-fee plaintiffs' lawyers may be quite good at assessing the merits of a case, whereas corporate lawyers may be less skilled in counseling clients to avoid paying excessive takeover premiums.77

The task of designing legal regimes to account for overoptimism is therefore complicated by the fact that people are not invariably optimistic, and it is often difficult to predict a priori whether a given population will be overly optimistic or not, at least at the level of abstraction required when drafting legislation or regulations.

Finally, even when people will not necessarily decide matters in their own best interests, the policy implications of this behavioral insight are far from clear. In particular, these cognitive errors in risk assessment do not necessarily justify government intervention to protect people from the consequences of their own bad decisions-although in some circumstances they may.78 Overoptimism does not necessarily justify government intervention, because if individuals suffer from robust cognitive biases, then regulators, judges, and juries presumably do as well. Indeed, these decision makers may be particularly vulnerable to certain biases because they are often insulated from the forces that encourage true learning.79 Moreover, government officials' decisions may be infected by other biases. For example, government actors are unlikely to make superior risk assessments if they must decide matters ex post-for example, after someone has been injured-because evidence suggests that people are vulnerable to "hindsight bias" which causes them to place excess weight on the event that did occur in determining the ex ante risk.80 Government actors also are likely to be influenced by various political pressures which may cause them to make decisions they know to be sub-optimal.sl For example, powerful business lobbies may induce regulators to declare as safe products that are not in fact safe. Alternatively, regulators may respond to public pressure for protection from certain well-publicized risks by imposing excessive regulations. Thus, intervening to protect people from their overoptimism will not necessarily improve social welfare.

C. Fairness and Self-Serving Bias

As with the other biases, scholars must fully understand the nature of fairness concerns before they can determine which transactions are likely to be affected by such concerns. Fairness concerns will affect people's choices-and reduce the number of mutually profitable transactions-in some circumstances. Evidence suggests that people do not always require "fair" outcomes, however. Some people may require "fairness" only in some situations; other people may not care about fairness at all. Moreover, evidence suggests that the context of the decision and the surrounding norms may significantly affect the degree to which fairness concerns play a role. For example, college students playing the Ultimatum Game required that transactions be fair, but economics graduate students did not. Economics graduate students generally made, and accepted, the minimum offer-as economic theory would predict. This suggests either that some groups of people do not care about fairness (and become economists), or that perhaps "fairness" can be "unlearned" and that education or norms may affect people's willingness to insist that a deal be "fair."84

Evidence also suggests that people's attitudes towards fairness are context-dependent. For example, some evidence exists that people will obey instructions to ignore fairness concerns. In one multi-stage version of the Ultimatum Game, subjects were told that they should maximize their winnings.m Consistent with predictions of economic theory, the first players in this experiment made minimal offers. While the design of that experiment does not permit us to assert conclusively that the instructions induced the participants to be less fair,86 it is suggestive. In particular, it suggests that fairness concerns may be less potent in the corporate context, where managers are directed to maximize profits.

Professors Hoffman and Spitzer provide further evidence that people's attitudes towards fairness are context-dependent. They ran an experiment in which the identity of the allocator or recipient was determined either by a coin toss or by winning a game. They examined whether those people who won the right to allocate the money by winning the game were more likely to favor themselves than those who won the coin toss. They also examined whether the first player was less likely to be fair if he was told that he "earned" the right to be the allocator than if he was "designated" the allocator. Interestingly, they found that while the method of winning the right to allocate the money had some effect on how the money was allocated, being told that one had earned it (whether by a coin toss or through winning a game) significantly affected the results: Those who were told they "earned" the right took significantly more money and were less "fair."87

The evidence thus reveals that economists cannot assume that people do not care about fairness. But it does not yet allow us to predict when fairness concerns will affect people's decisions as a general matter, because the role of fairness concerns-including selfserving fairness concerns-appear to depend on many situationspecific factors such as the background of the person, the context of the decision, the instructions given to the decision maker, and possibly the prevailing norm. Moreover, as with other self-serving biases, institutions and third parties may intervene to eliminate or mediate the fairness bias. People may be able to be debiased by being required to list the weaknesses of their own positions. Intermediaries, such as lawyers, may be particularly effective at debiasing clients.

IV. CONCLUSION

The end of the twentieth century has witnessed a dramatic increase in our understanding of human behavior. The results of this research are exciting and important, with far-reaching implications for legal analysis. In particular, this research reveals that people often do not behave consistently with rational choice theory-the cornerstone of both conventional law and economics analysis and much standard legal analysis.

Behavioral economic analysis of law scholars correctly argue that the existing scholarship on human behavior calls into question many of the conclusions of conventional law and economics. Conventional law and economics scholars must take behavioral research into account in analyzing legal issues, particularly in analyzing the merits of normative policy prescriptions derived from standard economic theory. The growing body of literature that enriches conventional law and economics in this way is an exciting development.

Nevertheless, behavioral economic analysis of law is likely to remain as a set of suggestions for amending conventional law and economics, together with an associated set of problems that require sustained attention. It is not likely to emerge as an alternative framework for analyzing legal issues. Behavioral economic analysis of law is unlikely to replace conventional law and economics unless it can formulate a superior model of human behavior suitable for making normative decisions about optimal legal regimes. Yet it will be difficult to construct a more realistic model of human behavior based on cognitive biases whose origins, scope, and magnitude are not well understood. Many of the behavioral results occur in some circumstances but not in other, relatively similar, circumstances. Other behavioral results are robust in the laboratory, but are not necessarily robust in the

circumstances in which people find themselves in the real world. Individual learning, group dynamics, organizations, experts, markets, and government policy all can affect whether people will exhibit various biases and heuristics. In addition, people often are subject to multiple biases with conflicting effects; the effects are even more uncertain when decisions involve multiple participants who each may be subject to various biases. Finally, the task of formulating policy prescriptions based on behavioral analysis is further complicated by the fact that most observed biases are likely to affect not only the individuals we might seek to protect but any government officials brought in to protect them-giving rise to the possibility that the cure may be worse than the disease.

Thus, while conventional law and economics cannot ignore psychology, we do not yet have a coherent, robust alternative paradigm. Behavioral economic analysis of law shows promise, but it cannot yet provide us with a rigorous analytical framework which is consistently superior to conventional law and economics. The task of trying to develop such a framework, however, should be worth the effort.

[Footnote]
1. See R.H. Coase, The Problem of Social Cost, 3 J.L. & ECON. 1 (1960).

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2. See id.; see also Guido Calabresi & A. Douglas Melamed, Property Rules, Liability Rules and Inalienability: One View of the Cathedral, 85 HARV. L. REV. 1089 (1972); Robert Cooter, Prices and Sanctions, 84 COLUM. L. REV. 1523 (1984).
3. See GARY S. BECKER, THE ECONOMIC APPROACH TO HUMAN BEHAVIOR 14 (1976); Christine Jolls, Cass Sunstein & Richard Thaler, A Behavioral Approach to Law and Economics, 50 STAN. L. REv. 1471, 1476 (1998). Game Theory makes additional restrictive assumptions about the nature of human behavior. For a discussion of the challenge posed by behavioral economics for standard game theory see generally Colin F. Camerer, Progress in Behavioral Game Theory, 11 J. ECON. PERS?., Fall 1997, at 167.

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4. Behavioral economic analysis of law builds on research by psychologists and behavioral economists that goes back more than a generation. Early work in this area includes Daniel Kahneman & Amos Tversky, On the Psychology of Prediction, 80 PSYCHOL. REV. 237 (1973); Daniel Kahneman & Amos Tversky, Prospect Theory: An Analysis of Decision Under Risk, 47 ECoNoMETRICA 263 (1979) [hereinafter Kahneman & Tversky, Prospect Theory]; Richard Thaler, Mental Accounting and Consumer Choice, 4 MARKETING SCI. 199 (1985); Richard Thaler, Some Empirical Evidence on Dynamic Inconsistency, 8 ECON. LETTERS 201 (1981); see also BARUCH FISCHHOFF ET AL., ACCEPTABLE RISK (1981) (noting that people overestimate low probability risks and underestimate high probability risks); W. Kip Viscusi, Are Individuals Bayesian Decision Makers?, 75 AM. ECON. REV. 381 (1985); W. Kip Viscusi, Consumer Behavior and the Safety Effects of Product Safety Regulation, 28 J.L. & ECON. 527, 553 (1985).

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5. See generally RICHARD H. TH THE WINNER'S CURSE: PARADOXES AND ANOMALIES OF ECONOMIC LIFE 63-7B (1992).

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6. See Leda Cosmides & John Tooby, Better Than Rational: Evolutionary Psychology and the Invisible Hand, 84 AM. ECoN. REv. 327, 329 (1994) ("rational' decision-making methods. . . are computationally very weak: incapable of solving the natural adaptive problems our ancestors had to solve reliably in order to reproduce").
7. See, e.g., George L. Priest, The Current Insurance Crisis and Modern Tort Law, 96 YALE L.J. 1521, 1550-62 (1987); Alan Schwartz, Proposals for Products Liability Reform: A Theoretical Synthesis, 97 YALE L.J. 353, 413-15 (1988).

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8. See Alan Schwartz & Louis L. Wilde, Imperfect Information in Markets for Contract Terms: The Examples of Warranties and Security Interests, 69 VA. L. REV. 1387, 1462 (1983) (stating that legislatures should not necessarily ban contract terms consumers are familiar with, such as limited warranties); see also Andrew Kull, Mistake, Frustration, and the Windfall Principle of Contract Remedies, 43 HASTINGS L.J. 1 (1991).

9. Indeed there now exists an increasingly rich literature which attempts to blend behavioral and economic analysis of law: behavioral economic analysis of law. For a survey of this literature see Donald C. Langevoort, Behavioral Theories of Judgment and Decision Making in Legal Scholarship: A Literature Review, 51 VAND. L. REV. 1499 (1998).

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10. See Roberta Romano, A Comment on Information Overload, Cognitive Illusions, and Their Implications for Public Policy, 59 S. CAL. L. REV. 313 (1986). For a discussion of biases that persist in the organizational context see Donald C. Langevoort, Organized Illusions: A Behavioral Theory of Why Corporations Mislead Stock Market Investors (and Cause Other Social Harms), 146 U. PA. L. REv. 101 (1997).

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11. This is not to say that behavioral economic analysis of law cannot be used to formulate any normative policies, but rather that it cannot yet provide a general framework applicable to many areas of law. Efforts to use behavioral analysis as the basis of normative policy conclusions include Jolls et al., supra note 3, at 1522-45; Edward J. McCaffery, Daniel Kahneman & Matthew Spitzer, Framing the Jury: Cognitive Perspectives on Pain and Suffering Awards, 81 VA. L. REV. 1341, 1397-1403 (1995); Matthew L. Spitzer, Human Inference: Strategies and Shortcomings of Social Judgment, 9 HOFSTRA L. REV. 1621 (1981) (book review). 12. For an example of this general approach see THALER, WINNER'S CURSE, supra note 5.

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13. See, e.g., Leda Cosmides & John Tooby, Are Humans Good Intuitive Statisticians After All?: Rethinking Some Conclusions from the Literature on Judgment Under Uncertainty, 58 COGNITION 1 (1996) (questioning whether natural selection would produce people who are incapable of assessing risk correctly).
14. See infra Part II.A (showing that people exhibit endowment effects in some circumstances but not in others).

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15. See Langevoort, supra note 10, at 130-56 (discussing bias). 16. See Romano, supra note 10.

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17. See generally THALER, WINNER'S CURSE, supra note 5 (discussing various biases and heuristics). For a discussion of the behavioral law and economics literature discussing various deviations from rational choice see Langevoort, supra note 9.

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18. See generally THALER, WINNER'S CURSE, supra note 5, at 63-78. 19. See id. at 64-66. Further research has shown that the endowment effect is larger the longer the subjects possess the mug before being asked to trade it. See Michael Strahilevitz & George Loewenstein, The Effect of Past and Present Ownership on the Valuation of Objects (1998) (unpublished manuscript, on file with the Author).

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20. See Elizabeth Hoffman & Matthew L. Spitzer, Willingness to Pay vs. Willingness to Accept: Legal and Economic Implications, 71 WASH. U. L.Q. 59, 99 (1993); Daniel Kahneman, Jack Knetsch & Richard Thaler, Experimental Tests of the Endowment Effect and the Coase Theorem, 98 J. POL. ECON. 1325 (1990).

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21. See Hoffman & Spitzer, supra note 20, at 103-13. 22. See generally William Samuelson 8i Richard Zeckhauser, Status Quo Bias in Decision Making, 1 J. RISK & UNCERTAINTY 7 (1988) (discussing status quo bias and its applications).

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23. See Russell B. Korobkin, Inertia and Preference in Contract Negotiation: The Psychological Power

of the Default Rules and Form Terms, 51 VAND. L. REV.1583,1587 (1998); Russell Korobkin, The Status Quo Bias and Contract Default Rules, 83 CoRNELL L. REV. 608, 663-33 (1998); see also Marcel Kahan & Michael Klausner, Path Dependence in Corporate Contracting: Increasing Returns, Herd Behavior and Cognitive Biases, 74 WASH. U. L.Q. 347, 361-62 (1996).
24. See generally Langevoort, supra note 9 (surveying the literature in this area).

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25. See Christine Jolls, Behavioral Economics Analysis of Redistributive Legal Rules, 51 VAND. L. REV. 1653, 1659 (1998); Cass R. Sunstein, Behavioral Analysis of Law, 64 U. CHI. L. REV. 1175, 1183 (1997). This overoptimism not only affects experimental subjects but also people operating out in the real world. See, e.g., Neil Weinstein, Unrealistic Optimism About Susceptibility to Health Problems: Conclusions from a Community-Wide Sample, 10 J. BEHAV. MED. 481 (1987).
People do not underestimate all "nonsalient" low probability events, however. Although people may underestimate low probability events that are hidden and come as a surprise evidence suggests that they overestimate other low probability events, such as the chance of being struck by lightning or killed by a tornado. See W. KIP VISCUSI, REFORMING PRODUCTS LIABILITY 64 (1991).
26. See generally MAX BAZERMAN, JUDGMENT IN MANAGERIAL DECISION MAKING 95 (4th ed. 1998).

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27. See id at 95-96.
28. See SHELLEY E. TAYLOR, POSITIVE ILLUSIONS: CREATIVE SELF-DECEPTION AND THE HEALTHY MIND 10-11 (1989); VISCUSI, supra note 25, at 65; Sunstein, supra note 25, at 1188; Ola Svenson, Are We All Less Risky and More Skillful Than Our Fellow Drivers?, 47 ACTA PSYCHOLOGICA 143 (1981).
Similarly, students surveyed about job prospects expected that they would be far less likely than their classmates to lose their jobs. See Sunstein, supra note 25, at 1183.

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29. This possibility is exacerbated by people's tendency to overly discount future risks, causing them to engage in more current consumption and to provide less for the future than economic theory would imply.
30. See Howard Latin, "Good" Warnings, Bad Products, and Cognitive Limitations, 41 UCLA L. REv. 1193 (1994); see also Michael Spence, Consumer Misperceptions, Product Failure and Producer Liability, 44 REv. ECON. STUD. 561 (1977) (arguing for products liability if consumers underestimate risks). Similarly, the bounded rationality of consumers also may justify mandatory product warranties. See Richard Craswell, Passing on the Costs of Legal Rules: Efficiency and Distribution in Buyer-Seller Relationships, 43 STAN. L. REV. 361, 388-90 (1991).

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31. See generally Jennifer H. Arlen & William J. Carney, Vicarious Liability for Fraud on Securities Markets: Theory and Evidence, 1992 U. ILL. L. REV. 691. 32. See id. at 724-27; cf. Cindy Alexander & Mark A. Cohen, Why Do Corporations Become Criminals? Ownership, Hidden Action and Crime as an Agency Cost, J. CORP. FIN. (forthcoming) (stating that publicly held firms are more likely to engage in crime as management's ownership stake declines).

[Footnote]
33. See Langevoort, supra note 10. 34. See generally Jolls et al., supra note 3.

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35. See generally id. at 1489-1493 (discussing this research); see also Werner Guth, Rolf Schmittberger & Bernd Schwarcze, An Experimental Analysis of Ultimatum Bargaining, 3 J. ECON. BEHAV. & ORG. 367 (1982); Daniel Kahneman, Jack Knetsch & Richard Thaler, Fairness and the Assumptions of Economics, 59 J. BuS. S285, S291 (1986).
36. See generally THrU.ER, WINNER'S CURSE, supra note 5; Jolls et al., supra note 3, at 1489-90.

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37. See Guth et al., supra note 35, at 375, 379; Kahneman et al., supra note 35, at S292 tbl.2; see

also Colin Camerer & Richard H. Thaler, Anomalies: Ultimatums, Dictators and Manners, 9 J. ECON. PERSP., Spring 1995, at 209, 210 (noting that offers generally range from 30-40 percent).

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38. See, e.g., Jolla et al., supra note 3.
39. See Elizabeth Hoffman & Matthew L. Spitzer, Entitlements, Rights, and Fairness: An Experimental Examination of Subjects' Concepts of Distributive Justice, 14 J. LEGAL STUD. 259 (1985).

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40. See BAZERMAN, supra note 26, at 96, 99-101; Linda Babcock & George Loewenstein, Explaining Bargaining Impasse: The Role of Self-Serving Biases, 11 J. ECON. PERSP., Winter 1997, at 109, 119-21; Daniel Kahneman & Amos Tversky, Conflict Resolution: A Cognitive Perspective, in BARRIERS TO CONFLICT REsoLUTION 44, 46-50 (Kenneth J. Arrow et al. eds., 1995).

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41. See Langevoort, supra note 10 (discussing group behavior); see also James D. Cox & Harry L. Munsinger, Bias in the Boardroom: Psychological Foundations and Legal Implications of Corporate Cohesion, 48 L. & CONTEMP. PROB. 83, 100-01 (1985).

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42. For an interesting discussion of conflicting biases and heuristics involved in people's choices about risk see Roger G. Noll & James E. Krier, Some Implications of Cognitive Psychology for Risk Regulation, 19 J. LEGAL STUD. 747 (1990). 43. See generally Chip Heath, Richard Larrick & Joshua Klayman, Cognitive Repairs: How Organizational Practices Compensate for Individual Shortcomings, 20 REs. IN ORGANIZATIONAL BEHAV. 1 (1998); Romano, supra note 10.

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44. See, e.g., Jolls et al., supra note 3.
45. See generally THAI.ER, WINNER'S CURSE, supra note 5, at 63-78 (noting that the endowment effect generally does not apply to goods purchased for resale).

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46. Probably the best developed theoretical explanation for the endowment effect is contained in Kahneman & Tversky, Prospect Theory, supra note 4, at 262; see also Strahilevitz & Loewenstein, supra note 19 (prospect theory combined with adaption level theory explain the endowment effect); cf H. Lorne Carmichael & W. Bentley MacLeod, Fair Territory: Preferences, Bargaining and the Endowment Effect (1998) (unpublished working paper, on file with the Author) (employing an evolutionary model of bargaining behavior to show that agents who are largely rational will exhibit an endowment effect in the presence of asymmetric information).

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47. See Kahneman et al., supra note 20. 48. See id.
49. See Jolls et al., supra note 3.

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50. For a discussion of existing studies on the impact of ownership structure on the endowment effect, see Jeffrey J. Rachlinski & Forest Jourden, Remedies and the Psychology of Ownership, 51 VAND. L. REV. 1541, 1558 (1998).
To further complicate matters, evidence suggests the endowment effect also varies with duration of ownership, and also that those who owned a good may persist in valuing it more highly even after they have sold the good. See Strahilevitz & Loewenstein, supra note 19.

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51. See Kahneman et al., supra note 20, at 1342 n.7.
52. See George Loewenstein & Daniel Adler, A Bias in the Prediction of Tastes, 105 ECON. J. 929 (1996).

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53. See Rachlinski & Jourden, supra note 50. More analysis is needed on this issue in order to explore some of Jourden and Rachlinski's results. For example, they find that the endowment effect is not only eliminated in the Iwihi Plant hypothetical when a right is protected with a high damage award, it is reversed. Moreover, in this hypothetical, people are more willing to sell when damages are high than when damages are low. This result is surprising because one would expect sellers and buyers to value a right more when the damage remedy is high than when it is low. Additional analysis is needed to fully explore the impact of remedies on the endowment effect, employing experiments in which subjects have actual rights or money at stake and are told explicitly the likelihood that a right will be taken under each of three remedies.

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54. See Calabresi & Melamed, supra note 2. For a discussion of the merits of liability rules see Ian Ayres & Eric Talley, Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade, 104 YALE L.J. 1027 (1995).

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55. See Jolls et al., supra note 3 (discussing why people are particularly unlikely to bargain around court orders).
56. See, e.g., Calabresi & Melamed, supra note 2. 57. See Hoffman & Spitzer, supra note 20, at 103-12.

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58. Efforts to do this include: Hoffman & Spitzer, supra note 20; Jack L. Knetsch, Environmental Policy Implications of Disparities Between Willingness to Pay and Compensation Demand Measures of Values, 18 J. ENVTL. ECON. & MGMT. 227, 235 (1990); McCaffery et al., supra note 11.

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59. See Cosmides & Tooby, supra note 13.
60. For arguments that the empirical evidence does not demonstrate that people underestimate risk see Schwartz, supra note 7; Oliver Williamson, Human Actors and Economic Organization (May 26,1998) (unpublished manuscript, on file with the Author). 61. See VISCUSI, supra note 25, at 64.
62. See W. KIP VISCUSI, FATAL TRADEOFFS: PUBLIC AND PRIVATE RESPONSIBILITIES FOR RISK (1992); Kahneman &z Tversky, supra note 40, at 47-48.

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63. See VISCUSI, supra note 25, at 64; Schwartz, supra note 25, at 64; Schwartz, supra note 7, at 381. This might suggest that the government should eliminate overoptimism by publicizing risks widely. Yet such intervention may not be advisable. People overestimate well-publicized risks Thus, publicizing risks can result in an excessive demand for legal intervention to protect people from wellpublicized, but not necessarily serious, risks. See Sunstein, supra note 25, at 1188 (discussing Timur Muran & Cass Sunstein, Availability Cascades and Risk Regulation (work in progress)). Moreover, it is not possible to eliminate all overconfidence in this way. See supra text accompanying notes 25-28.
64. See generally Noll & Krier, supra note 42.
65. See Camerer, supra note 3; Schwartz, supra note 7, at 381-82 (reviewing the literature).

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66. See Jolls et al., supra note 3. 67. See id.
68. See Romano, supra note 10, at 322.

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69. Nevertheless, care may not eliminate overoptimism because there is evidence that this self-serving bias is not simply a mental shortcut but may have adaptive antecedents, and thus may be quite resilient. See Langevoort, supra note 9, at 1523 n.54. 70. See Colin F. Camerer, Comment on Noll and Krier, Some Implications of Cognitive Psychology for Risk Regulation", 19 J. LEGAL STUD. 791, 794 (1990) [hereinafter Camerer, Comment]; Camerer, supra note 3, at 172-73 (people do not necessarily learn from experience). Nor is being overoptimistic necessarily bad. There is some

evidence to suggest that optimism is highly adaptive: People who are optimistic may be better able to take the risks necessary to produce good outcomes. See generally Donald C. Langevoort, Ego, Human Behavior and Law, 81 VA. L. REV. 853 (1995). Indeed, evidence suggests that people who are overly optimistic tend to be happier, more content, and better able to engage in productive, creative work. See TAYLOR, supra note 28, at 49, 59-65; Shelley E. Taylor & Jonathon D. Brown, Illusion and WellBeing: A Social Psychological Perspective on Mental Health, 103 PSYCHOL. BULL. 193 (1988). 71. See Jolls et al., supra note 3, at 1486-87. 72. See Camerer, Comment, supra note 70, at 794.

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73. See BAZERMAN, supra note 26. Nevertheless, the evidence that people have difficulty learning to accurately assess risk presents a puzzle. Presumably, making accurate judgements under uncertainty is an important adaptive trait. This raises the question of why would natural selection lead to these types of biases. See Cosmides & Tooby, supra note 6. Yet it may be that, as some have suggested, overoptimism is adaptive. See Langevoort, supra note 70. 74. See Langevoort, supra note 10, at 119-24. But see Heath et al., supra note 43.

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75. See Romano, supra note 10, at 324-25 (discussing the ability of lawyers to debias clients).

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76. See Linda Babcock, George Lowenstein, & Samuel Issacharoff, Creating Convergence: Debiasing Biased Litigants, 22 J.L. & So SOC. INQUIRY 913, 920 (1997).
77. See THALER,Eft, WINNER'S CURSE, supra note 5, at 50-62 (discussing the observation that the winner of an auction generally pays too much).

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78. For an argument that these biases justify products liability see, e.g., Latin, supra note 30; Howard A. Latin, Problem-Solving Behavior and Theories of Tort Liability, 73 CAL. L. REv. 677 (1985). For an argument that they do not, see Schwartz, supra note 7.
Nor is providing consumers with more information an obvious solution since behavioral analysis reveals that even well-informed consumers make biased choices. Moreover, publicity is likely to produce its own problems. See VISCUSI, supra note 25, at 64; Sunstein, supra note 25; see also Schwartz, supra note 7.

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79. See Camerer, supra note 3; cf. Richard E. Nisbett et al., The Use of Statistical Heuristics in Everyday Inductive Reasoning, 90 PSYCHOL. REV. 339 (1983) (noting that statistical training improves reasoning about everyday problems).
80. See Hal R. Arkes & Cindy A Schipani, Medical Malpractice v. the Business Judgement Rule: Differences in Hindsight Bias, 73 OR. L. REv. 587 (1994); Kim A Kamin & Jeffrey J. Rachlinski, Ex Post eEx Ante: Determining Liability in Hindsight, 19 L. & HUM. BEHAV. 89 (1995). Moreover, regulators, judges, and juries also may be affected by how the decision is framed. Decisions thus are subject to political manipulation. See McCaffery et al., supra note 11 (discussing the impact of framing effects on jury damage award determinations).
81. See generally DANIEL A. FARMER & PHILIP P. FRICKEY, LAW AND PUBLIC CHOICE: A CRITICAL INTRODUCTION (1991) (surveying the literature on public choice). 82. See supra note 63.

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83. See Robert H. Frank, Dennis Regan & Tom Gilovich, Does Studying Economics Inhibit Cooperation?, 7 J. ECON. PEP., Spring 1993, at 159, 160-62; Robert H. Frank, Dennis Regan & Tom Gilovich, Do Economists Make Bad Citizens?, 10 J. ECON. PESP., Winter 1996, at 187; see also John R. Carter & Michael D. Irons, Are Economists Different, and If So, Why?, 5 J. ECON. PERP., Spring 1991, at 171; Gerald Maxwell & Ruth E. Ames, Economists Free Ride, Does Anyone Else?: Experiments on the Prouision of Public Goods, IV, 15 J. PUB. ECON. 295 (1981). 84. Cf. Jolls et al., supra note 3, at 1493-96.

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85. See K Binmore et al., Testing Noncooperative Bgrgaining Theory: A Preliminary Study, 75 AM. ECON. REV. 1178 (1985). For a discussion of this experiment see THALER, WINNER'S CURSE, supra note 5, at 26-27. 86. See THnI,ER, WINNER's CURSE, supra note 5, at 26-27.

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87. See generally Hoffman & Spitzer, supra note 39.

[Author note]
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